

POLYUNSATURATED FATTY ACIDS IN PLANTS**ABSTRACT**

5 The present invention relates to compositions and methods for preparing
polyunsaturated long chain fatty acids in plants, plant parts and plant cells, such
as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs
encoding fatty acid desaturases, including $\Delta 5$ -desaturases, $\Delta 6$ -desaturases and Δ
12-desaturases, are used to generate transgenic plants, plant parts and cells
10 which contain and express one or more transgenes encoding one or more
desaturases. Expression of the desaturases with different substrate specificities
in the plant system permit the large scale production of polyunsaturated long
chain fatty acids such as docosahexaenoic acid, eicosapentaenoic acid, α -
linolenic acid, gamma-linolenic acid, arachidonic acid and the like for
15 modification of the fatty acid profile of plants, plant parts and tissues.
Manipulation of the fatty acid profiles allows for the production of commercial
quantities of novel plant oils and products.